

Causal Analysis & Resolution

**Version History**

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# SCOPE

Processes and Products can never be considered absolute. Circumstances and situations may arise resulting in deviation from the defined and documented system. Circumstances may also exist wherein the defined system, unless changed, cannot be effectively implemented.

This procedure defines the methodology of identifying and analyzing the causes of defects and other problems during the execution of the projects and taking suitable actions to correct those type of defects and problems to prevent them from recurring..

# USERS OF THE DOCUMENT

 Every employee concerned with implementation of quality management system.

# ENTRY CRITERIA

* Size, effort, schedule, defects or cost not meeting performance objectives
* Defects Data Trends need to be controlled.
* Customer complaint
* Repetition of a particular problem

# INPUTS

* Metrics data
* Defect Data
* Customer complaint
* Audit report

# EXIT CRITERIA

* Corrective actions closed
* Proposed preventive action
* Preventive actions passed on to QA for organization-level implementation

# OUTPUTS

* Data Tracking sheets/ tool
* Causal Analysis reports (Reference Template)

# PROCESS DESCRIPTION

## Causal Analysis

Causal Analysis is the process of determining the underlying cause(s) for a particular problem, eliminating them and preventing them from recurring. It is performed upon trends detected from collecting error data throughout the software development lifecycle. Causal Analysis is a simple, low-cost method for improving the quality and process performance objectives. There are various techniques for conducting Causal Analysis eg: fishbone analysis, Pareto analysis, etc. Project Manager) shall determine which outcomes shall be analyzed by reviewing the project metric data. Based upon the data analysis the causes shall be finalized and prioritized. The main aim is to identify the major deviations in the process performance objectives. Scope of Analysis and expected improvements shall be defined. Every Causal Analysis with Causes Analyzed and the planned actions shall be maintained.

### Triggers for Causal Analysis

* Major deviations from the process performance objectives
* identified while establishing process capability baselines
* identified when process performance models are implemented
* A single point falls outside the upper and lower control limits.
* Any of the following patterns observed on control charts
* Shifts
* Trends
* Same Value
* Too few runs
* Too many runs
* Defect Trend Analysis reports
* Customer complaint
* Non compliances found during audits
* At project closure, if needed

### Stating the Problem

The Project Manager calls for a causal analysis meeting to perform causal analysis. This meeting will include all the relevant members who have an understanding of the selected defect or problem under study, typically in meetings. The people who have the best understanding of the selected defect/problem are typically those responsible for performing the task:

The causal analysis team:

* Collects data related to the problem. The data is collected from:
* Defect Trends
* Metrics data
* Customer complaint, or
* Any other problem identified.
* Documents the problem on the Causal Analysis form

### Identifying Causes

The causal analysis team:

* Conducts the causal analysis using the causal analysis techniques(eg: fishbone diagram, Pareto analysis, brainstorming, etc)
* Identifies all the causes of the problem on the Causal Analysis form
* Categorizes the causes into
* Common Causes (Common Causes are expected, predictable, normal, random and chance.) and
* Special Causes (Special causes are unexpected, unpredictable, assignable, not normal and non random).
* From all the causes, identify the root causes.

### Defining corrective preventive actions

* Document corrective and preventive action proposals for all causes in the CAR Report with planned end dates for all action proposals.
* The effect of corrective and preventive actions on process performance objectives such as delivery variance, review efficiency, testing efficiency and defect density, etc need to be documented in the CAR report.
* Cost Benefit Analysis for different action proposals shall be done and included in the CAR Report.
* Proposed actions/proposals shall be prioritized and implemented.

### Tracking and Evaluation of Actions

The Project Manager shall monitor:

* Trends to see the effectiveness of corrective and preventive actions, such as the trends of the defect data, Trends of the defect density in the project, trends of the rework effort or trends of schedule variance.
* Each of the Corrective and preventive action will be tracked and evaluated to check the effectiveness.
* Anticipated and Actual benefits are analyzed.

### Corrective and Preventive Actions Review

* Project manager shall submit the CAR reports to Quality head.
* Quality-Head shall present the report on effectiveness of corrective and preventive action in the Management Review Meeting

### Record and Disseminate results of Corrective and Preventive Actions

* The records of Causal analysis will be collected and maintained in organization repository.
* Quality-Head is responsible for dissemination of knowledge and actions taken though this process across the organization.

# Formats and guidelines